

Claims:

1. In a headlight lamp 100 adapted in a headlight for a vehicle, a headlight lamp having a multifunction structure, comprising:

a plurality of high angle headlight filaments 115, 125 capable of lighting
5 for providing a high angle beam to a vehicle;

a plurality of low angle headlight filaments 111, 121 capable of lighting for providing a low angle beam to the vehicle;

low angle headlight reflection covers 112, 122 provided in the low angle headlight filaments 111, 121, respectively, for thereby allowing the light from the
10 low angle headlight filaments 111, 121 to have a low beam pattern angle; and

external connection terminals 118, 128 corresponding to the high and low angle headlight filaments 115/125, 111/121, respectively.

2. The lamp of claim 1, further comprising:

15 a plurality of middle angle headlight filaments 113, 123 capable of providing a middle angle beam to the vehicle;

middle angle headlight reflection covers 114, 124 provided in the middle angle headlight filaments 113, 123, respectively, for thereby allowing the light from the middle headlight filaments 113, 123 to have a middle beam pattern
20 angle; and

external connection terminals 118, 128 corresponding to the middle angle headlight filaments 113, 123, respectively.

3. The lamp of claim 1, further comprising:

more than at least one steering headlight filament 117, 127 providing a steering beam in one direction between left and right directions to the vehicle;

5 steering headlight reflection covers 116, 126 provided in the steering headlight filaments 117, 127, respectively, for thereby allowing the light from the steering headlight filaments 117, 127 to have a steering beam pattern angle; and

external connection terminals 118, 128 corresponding to each of more
10 than at least one steering headlight filament 117, 127, respectively.

4. In a headlight lamp 200 adapted in a headlight for a vehicle, a headlight lamp having a multifunction structure, comprising:

a plurality of high angle headlight lamps 210b, 220b each formed of a
15 plurality of high angle headlight filaments 215, 225, and external connection terminals 218b, 228b corresponding to the high angle headlight filaments 215, 225 for thereby providing a high angle beam to the vehicle; and

a plurality of low angle headlight lamps 210a, 220a each including a plurality of low angle headlight filaments 211, 221, a plurality of low angle
20 headlight reflection covers 212, 222 provided in the low angle headlight filaments 211, 221, and a plurality of external connection terminals 218a, 228a corresponding to the low angle headlight filaments 211, 221, for thereby

providing a low angle beam to the vehicle.

5. The lamp of claim 4, wherein said high angle headlight lamps 210b, 220b each include:

5 more than at least one steering headlight filament 217b, 227b capable of emitting light for providing a steering beam to the vehicle;

steering headlight reflection covers 216b, 226b provided in the steering headlight filaments 217b, 227b for allowing the light from the steering headlight filaments 217b, 227b to have a steering beam pattern angle; and

10 external connection terminals 218b, 228b corresponding to the steering headlight filaments 217b, 227b, respectively.

6. The lamp of claim 4, wherein said low angle headlight lamps 210a, 220a each include:

15 more than at least one steering headlight filament 217a, 227a capable of emitting light for providing a steering beam to the vehicle;

steering headlight reflection covers 216a, 226a provided in the steering headlight filaments 217a, 227a for allowing the light from the steering headlight filament 217a, 227a to have a steering beam pattern angle; and

20 external connection terminals 218a, 228a corresponding to the steering headlight filaments 217a, 227a, respectively.

7. The lamp of claim 4, wherein said high angle headlight lamps 210b, 220b each include:

more than at least one middle headlight filament 213b, 223b capable of emitting light for providing a middle angle beam to the vehicle;

5 middle angle headlight reflection covers 214b, 224b provided in the middle headlight filaments 213b, 223b for allowing the light from the middle angle headlight filaments 213b, 223b to have a middle angle beam pattern angle; and

external connection terminals 218b, 228b corresponding to the middle
10 steering headlight filaments 213b, 223b, respectively.

8. The lamp of claim 4, wherein said low angle headlight lamps 210a, 220a each include:

more than at least one middle angle headlight filament 213a, 223a
15 capable of emitting light for providing a middle angle beam to the vehicle;

middle angle headlight reflection covers 214a, 224a provided in the middle headlight filaments 213a, 223a for allowing the light from the middle angle headlight filaments 213a, 223a to have a middle angle beam pattern angle; and

20 external connection terminals 218a, 228a corresponding to the middle angle headlight filaments 213a, 223a, respectively.

9. In an apparatus for controlling a headlight for a vehicle having a headlight lamp of a multifunction structure having a plurality of high, middle and low angle headlight filaments 115/125, 113/123, 111/121, 117/127 each capable of emitting light for providing high, middle and low angle steering beams, an
5 apparatus for controlling a headlight for a vehicle, comprising:

a light switch 20 capable of providing an automatic mode to a vehicle driver, said automatic mode capable of automatically changing an on and off time of the headlight 300 and a lighting angle of the headlight 300;

a vehicle speed sensor 40 for detecting a running speed of a vehicle
10 when an automatic mode is selected by the light switch 20 and generating a vehicle speed signal corresponding to the detected vehicle speed;

an opponent vehicle headlight luminous intensity sensor 60 for detecting a luminous intensity of the opponent vehicle headlight of the vehicle when the automatic mode is selected by the light switch 20 and generating a
15 luminous intensity signal corresponding to the detected opponent vehicle luminous intensity;

a vehicle surrounding luminous intensity sensor 50 for detecting a surrounding luminous intensity of the vehicle when the automatic mode is selected by the light switch 20 and generating a luminous intensity signal
20 corresponding to the detected surrounding luminous intensity;

a controller 10 for determining a lighting step of the headlight 300 in accordance with a vehicle speed, opponent vehicle headlight luminous intensity

signal and vehicle surrounding luminous intensity signal from the vehicle speed sensor 40, the opponent vehicle headlight luminous intensity sensor 60 and the vehicle surrounding luminous intensity sensor 50 and controlling an operation that a corresponding filament among the high, middle and low angle headlight
5 filaments 115/125, 113/123, 111/121 is turned on based on the determined lighting step;

a headlight relay unit 80 for supplying a power to a corresponding selected filament based on the determined lighting step among the high, middle and low angle headlight filaments 115/125, 113/123, 111/121 in accordance with
10 a control of the controller; and

a power unit 90 for supplying a power to each element of the vehicle.

10. The apparatus of claim 9, further comprising:

a steering sensor 70 for detecting a steering state of the vehicle and
15 generating a steering signal corresponding to the detected steering direction;

a controller 10 for determining a steering direction of the vehicle based on a steering signal from the steering sensor 70 and controlling an operation that the steering headlight filaments 117, 127 of a corresponding direction among the steering headlight filaments 117, 127 is turned on in accordance with
20 the determined steering direction; and

a headlight relay unit 80 for supplying a power to the steering headlight filaments 117, 127 of a corresponding direction determined in accordance with

the steering signal among the steering headlight filaments 117, 127.

11. The apparatus of claim 9, further comprising a headlight passing switch 30 for turning on a certain filament among the high, middle and low angle
5 headlight filaments 115/125, 113/123, 111/121 based on a driver's operation when the manual mode of the light switch 20 is selected and for lighting a beam having a corresponding angle to the vehicle.

12. In a method for controlling a headlight of a vehicle using headlight
10 lamps 100, 200 each having a multifunction structure having high, middle, low and steering angle headlight filaments capable of emitting light for providing high, middle, low and steering beams, a method for controlling a headlight of a vehicle, comprising the steps of:

a step for performing a headlight automatic mode in such a manner that
15 a vehicle driver adjusts a light switch 20;

a step for detecting a running speed of the vehicle by driving a vehicle speed sensor 40;

a step for determining a lighting step corresponding to the detected vehicle speed from a vehicle speed signal from the vehicle speed sensor 40;

20 a step for turning on a corresponding filament among the high, middle and low angle headlight filaments in accordance with the determined lighting step;

a step for detecting an opponent vehicle headlight luminous intensity of the vehicle by driving an opponent vehicle headlight luminous intensity sensor 60;

5 a step for determining a lighting step corresponding to the detected opponent vehicle headlight luminous intensity from a luminous intensity signal from the opponent vehicle headlight luminous intensity sensor 60;

a step for turning on a corresponding filament among the high, middle and low angle headlight filaments in accordance with the determined lighting step;

10 a step for detecting the surrounding luminous intensity of the vehicle by driving a vehicle surrounding luminous intensity sensor 50;

a step for determining a lighting step corresponding to the detected vehicle surrounding luminous intensity from a luminous intensity signal from the vehicle surrounding luminous intensity sensor 50; and

15 a step for turning on a corresponding filament among the high, middle, and low angle filament in accordance with the determined lighting step.

13. The method of claim 12, further comprising:

20 a step for detecting a steering state of the vehicle by driving a steering sensor 70;

a step for determining a steering direction of the vehicle from a steering signal from the steering sensor 70; and

a step for turning on a corresponding filament corresponding to the steering direction among the steering headlight filaments in accordance with the determined lighting step.

5 14. The method of claim 12, further comprising:

a step for judging whether a corresponding filament is disconnected among the high, middle and low angle headlight filaments in accordance with the determined lighting step in accordance with a vehicle speed signal, an opponent vehicle headlight luminous intensity signal and a vehicle surrounding
10 luminous intensity signal from the vehicle speed sensor 40, an opponent vehicle headlight luminous intensity sensor 60 and a vehicle surrounding luminous intensity sensor 50;

a step for substituting the disconnected filament with a previously designated filament when the corresponding filament is disconnected and
15 turning on the filament; and

a step for adjusting the current lighting step and alarming a state that the corresponding filament is disconnected.

15. The method of claim 12, further comprising the steps of:

20 a step for judging whether there is an input of the headlight passing switch 30 by a vehicle driver;

a step for determining the lighting step corresponding to the inputted

switch operation when there is an input of the headlight passing switch 30; and
a step for turning on a corresponding filament among the high, middle
and low angle headlight filaments 115/125, 113/123, 111/121 in accordance with
the determined lighting step.

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